

Minutes of the Gulf of Alaska Groundfish Plan Team

North Pacific Fishery Management Council
605 W 4th Avenue, Suite 306
Anchorage, AK 99501

Alaska Fishery Science Center, Seattle WA
November 13 - 16, 2012

Diana Stram	NPFMC (co-chair)	Jim Ianelli	AFSC REFM (co-chair)
Sandra Lowe	AFSC REFM	Paul Spencer	AFSC REFM
Chris Lunsford	AFSC ABL	Leslie Slater	USFWS
Jon Heifetz	AFSC ABL	Nancy Friday	AFSC NMML
Mike Dalton*	AFSC REFM	Craig Faunce	AFSC FMA
Kristen Green	ADF&G	Elisa Russ	ADF&G
Tom Pearson**	NMFS AKRO Kodiak	Mark Stichert	ADF&G
		Ian Stewart	IPHC

* Absent, substitute Stephen Kasperski (for Dalton)

** By telephone

Ecosystem Chapter Review

New to the GOA Plan Team is an FMP specific presentation on the Ecosystem Chapter instead of a joint team presentation. Stephani Zador presented pertinent indices and hot topics to the Team. A new Gulf of Alaska ecosystem assessment was delayed and is planned for 2013.

In 2011, anomalous conditions signaled poor prey availability for some marine apex predators (seabirds and halibut) in the GOA. Biologically this was evidenced by low zooplankton biomass in the Alaskan shelf region south of the Kenai Peninsula between April and September 2011, below average forage fish CPUE in the small mesh surveys, low age-1 pollock survey abundance in the acoustic Shelikof Strait survey, juvenile pink salmon CPUE in southeast Alaska that was the second lowest in 15 years, surface trawls conducted in 2011, as part of the first year of the GOA Integrated Ecosystem Research Project, caught few age-0 marine fish in both the western and eastern GOA, and low seabird reproductive success. While it is unknown whether these anomalies are climate driven, the 2010/2011 endpoint for January 2011 PAPA Trajectory Index was among the weakest (east of the release site and the southernmost endpoint since the early 1990s) indicating reduced along shelf Gulf flow and transport.

Mushy halibut Syndrome has reoccurred. This condition was first detected in 1998, was seen in 2005 and 2011 and now again in 2012. It has been proposed by some that this condition is evidence of nutritional deficiency in part because ADF&G reports that they are seeing more crab in stomachs than historical data showed. If proven correct, this would represent another biological signal of poor prey availability in the GOA.

Other indices presented included bycatch estimates and herring spawning biomass. Discard rates of non-target marine species in the GOA have varied over time but were lower than average in 2010 and 2011. Grenadiers (caught primarily in the sablefish fishery) comprised the majority of “non-specified” catch that dominated this bycatch. Bycatch of seabirds in the longline fishery showed a marked decline beginning in 2002 due to the deployment of streamer lines as bird deterrents and since then, annual bycatch has remained low. There is high variability between years however; while the 2010 bycatch was the lowest estimated in recent years, 2011 bycatch was 30% above the 2007-2010 average. In 2011,

albatross bycatch was disproportionate to overall trends; nearly 90% of albatross bycatch occurred in the GOA which accounts for only less than 20% of overall seabird bycatch. Estimates of southeast Alaska herring spawning biomass continue to increase due presumably to high survival of adult age classes. The 2010 and 2011 estimates of spawning biomass, combined for the entire region, were the two highest in the 32-year time series as reported by ADF&G.

Pollock

Martin Dorn presented an overview of the pollock assessment. The Team discussion was focused on the CIE review, SSC comments, model performance and development, apportionment, and EFP accounting.

Model performance and development

The updated model had several changes including adding ages 1 to the assessment, adding an accumulator age to the initial age composition, using selectivity blocks for fishery selectivity rather than allowing selectivity parameters to vary annually, and removing some of the historic data.

Rather than having annual selectivity curves, following CIE recommendations, the authors identified six selectivity blocks. Authors used prior management regimes (e.g. foreign, joint, domestic operations, and seasonal management measures to mitigate SSL impact) and the desire to have most recent years separate (the last block is 2007 onwards) as their rationale for blocking. The authors down-weighted the fishery age composition data to balance their approach to selectivity. The Team suggested using inter-annual smoothing instead of blocks to avoid the undesirable effect of highly correlated recruitments between years. If blocks are used, cross-validation analysis may also improve the identification of appropriate selectivity blocks to use. Despite the discussion, it was recognized by the Team that the problem of modeling selectivity presents many challenges.

The author noted that there may be some disadvantages using the multinomial error assumption for all ages, and that younger ages, age-1 and possibly age-2, might be best treated separately. There was discussion on the merits of splitting these younger fish from the rest of the distribution, since the survey estimates of these fish are more variable than the older fish. This approach (splitting out age-1 pollock as a separate index) is used for the eastern Bering Sea pollock model (for both acoustic and bottom-trawl survey data).

The authors provided comparisons between the base model (author recommended), last year's model, and the base model with estimated q using a lognormal prior distribution with a median of 0.85 and a log standard deviation of 0.1. Estimation of q with a prior results in a larger spawning biomass, an increase in the 2013 ABC and OFL, and greater uncertainty in 2013 spawning biomass. Based on the comparison of the models presented, the Team concurred with the use of the base model. The model performance was good overall, but the fit to some of the age composition data was poor, particularly for the acoustic survey. Evaluation of performance using a fishing mortality versus spawning biomass plot indicate that stock has been near or slightly over the control rule in the past, though this comparison is based on current estimates of biomass reference points. The likelihood that the stock will drop below B_{20} is near zero over the next five years.

There was general discussion between authors and the Team on how to improve relative weightings given different data sets, research to develop informative priors on survey selectivity and catchability, reconsidering selectivity parameterization, and exploring the implications of non-constant natural mortality on pollock assessment and management. For next year, the Team is anticipating that the author will present models with different approaches to selectivity, different approaches to modeling age-1 fish, and exploration of the more complex recommendations from the CIE review. The Team is hoping that a selectivity workshop in March will provide guidance on developing a robust parameterization for

selectivity. If substantial model revisions are made, the Team would expect to see a preliminary assessment at the September 2013 meeting.

The authors have included a retrospective plot and stock structure template in response to SSC requests. The Joint Plan Team recommended *status quo* methods be used for apportionment pending final working group recommendations. Therefore there were no changes to the averaging procedures to apportion the stock between management areas. The report on methodology used to derive GHL for Prince William Sound was addressed in September by the Plan Team.

Assessment CIE

Assessment authors will continue to improve on methods following CIE review recommendations. This year the author implemented recommendations which could be quickly accomplished without major changes to the model structure (e.g., the age range of the assessment was expanded to ages 1-10 from 2-10). Future assessments will explore CIE recommendations that require methodological development and substantial analysis (e.g., including predation mortality in the assessment). The Team briefly discussed a CIE review comment that the assessment be risk neutral. This comment is relevant to all stock assessments, and led to the specific question of “at what biomass is there no longer a need for the author’s recommended ABC lower than the maximum permissible ABC?” The author will examine this issue, but noted that given recent positive trends in the spawning stock biomass this appears to be less of a concern than past years.

The Team also received a briefing from MACE on their response to CIE comments, most notably a rebuttal of a strong critique by a reviewer of the acoustic trawl survey methods for extracting age composition data from Shelikof Strait survey. The MACE comments will be included in the AFSC response to the review.

Apportionments

Summer apportionment among GOA NMFS areas has not changed because there have been no new surveys. Winter apportionment followed the methods used in the last assessment. There was no additional discussion. Prince William Sound GHL will be set to 2.5% of the W/C/WYAK ABC.

2013 pollock EFP

The Team examined the NSG on the definition of catch. In particular, that any catch should be taken into account. Although the Team recognizes that the “Exempt” part of the EFP changes some regulatory properties, removals under an EFP still constitutes catch and should be accounted prior to ABC determinations. Subtracting EFP removals from the biomass prior to setting ABC accounts for these removals in the same manner as projected catch to the end of the year is done. This is common practice to ensure the best available ABCs are determined in the subsequent year. Also, 2014 ABCs are computed based on 2013 projected removals. Further, the amount of removals represented by the 2013 pollock EFP does *not* pose a risk that the OFL will be exceeded for the upcoming year and has no bearing on the uncertainty estimates related to ACLs. The Team is recommending this approach to EFP accounting to ensure that important research (on salmon bycatch) in the GOA be conducted. The Team reiterated that, this approach is not intended to set a precedent for all stocks and EFPs, and should be considered an interim approach until further guidance becomes available.

Pacific cod

Teresa Amar presented the assessment of GOA Pacific cod. As in past years she refined models based on detailed discussion and presentations given at the September 2012 meeting. At the September meeting the Team requested analysis where q is fixed at 1.0 rather than tuning to a specific size range (there was little difference between these model runs and the extra work required seemed unjustified). They also

requested models which dropped the heavily influential growth data components and the “sub-27cm” survey data. The Team discussed that the statistical weights from these likelihood components may be too high given the input sample size for the length-at-age data from NMFS surveys. It may be more appropriate to use the number of hauls instead of the raw numbers of fish. The Team suggested that the spatial aspect of available length-at-age data be evaluated, particular between years for the older/larger Pacific cod since in some years most of the apparent ‘lack-of-fit’ arose from the larger fish samples.

The Team suggested considering a model that had the features of Model 4 but with fixed growth (e.g., at Model 2 values), then look at constant selectivity for main survey data. Also examination of the possibility of using cubic splines over age, smoother shape and fewer parameters (in general) was recommended. Retrospective patterns should be evaluated as an additional diagnostic for alternative models (e.g., Model 4 may show an improved retrospective pattern. For communication purposes, when stock sizes change for the same year from one assessment to the next, it would be useful to evaluate the changes graphically (e.g., biomass at age for last year’s model with the accepted model this year). Since the fishery is comprised of many components, the Team suggested using a general exploitation matrix such as 1-SPR for F implied over time. This provides an indication of the effective exploitation rate relative to the reproductive potential of recruits entering the population.

The quota allocations between GOA regions are provided following two methods: a new approach (Kalman filter) vs status quo (weighted survey average). The Plan Team recommended going forward with the Kalman filter approach since the survey averaging work-group notes that this method is robust. The Team suggested that the stock synthesis feature to turn off age zeros whenever sub-27 age data were included should be activated.

Flatfish

Deep water flatfish

Buck Stockhausen presented the executive summaries for deep water flatfish, Dover sole, rex sole and flathead sole. An example of the use of the random effects model for survey averaging was applied but not selected for use in this cycle. The Team requested clarification on what represented artifacts of the model versus a true reflection of the biology. The Team would like to see this further developed and applied next year. A full assessment for Dover sole will be presented in September 2013.

Arrowtooth flounder

Jack Turnock presented the executive summary of the arrowtooth flounder (ATF) assessment and an assessment of the remaining species in the Shallow water flatfish assessment (which includes northern and southern rocksole model estimates in the complex-level specifications).

For arrowtooth flounder, it was noted that the lower catch in 2012 was due to halibut bycatch constraints, not market driven despite it being the first year that an increased TAC was specified but actual catches were lower. The WGOA fleet used up their halibut allocation in the Pacific cod target fishery combined with higher rates in ATF bycatch of halibut this year. The inflated rate of bycatch applied to the unobserved WGOA fleet complicated the situation, but should be mitigated somewhat next year with restructured observer coverage.

Shallow water flatfish

The Team recommends further exploration of consistency in apportionments for complexes, in particular with two Tier 3a species combined with Tier 5 assessments for the remaining members of the complex. The Team discussed setting separate specifications for a rocksole complex (ie outside of SWFs). Issues noted with pursuing this include MRAs, and halibut bycatch. The Team discussed that individual ABCs are tracked and not currently causing any concerns with species specific catch and ABCs. The Team

recommends monitoring these catches against individual ABCs to evaluate relative catch but does not recommend separate specifications for a rocksole complex at this point.

GOA rock sole (northern and southern)

Teresa Amar (lead author) responded to a number of requests made in September/October 2012 from the Plan Team and SSC. She presented the assessment highlights and noted that the catches for 2012 were down compared to recent years (presumably due to halibut bycatch). Overall, the observed catch represented about 20% of total estimated catch. She noted that a CIE review was conducted in the summer of 2012 but only preliminary changes were made in response to their comments. Most of the model alternatives involved looking at dropping different data components to examine sensitivity of model results. These data components were mainly dealing with mean length-at-age for different years. The model results were most sensitive for northern rock sole whereas alternatives for southern rock sole were more similar over the different models.

The Team noted it was very difficult to objectively evaluate the alternative models and suggested that a refined table for evaluating model fits be presented in the future. A more objective approach towards selecting Model 3 over other models was discussed at length. The author selected Model 3 based on results being intermediate to other configurations but further justification is needed. The fit to the surveys indicated a poor residual pattern for both species and also inconsistencies were noted with southern rock sole spawning biomass peaks in late 1980s and early 1990s which was attributed to changes in survey selectivity. The Team noted that the growth curve is fixed and as such, applying likelihoods related to fitting length-at-age may be inadvisable. A presentation of the relative estimates of uncertainty (e.g., spawning biomass over time) would be useful. The Team noted that next year there will be new survey length compositions and a biomass estimate by November. The Team suggested the possibility of examining an aggregated model (completely undifferentiated with some approach to account for growth differences) as a sensitivity run.

Pacific ocean perch

Chris Lunsford presented an update on the off-year Pacific ocean perch executive summary and 2013 projection model. New data for the projection model included updated catch for 2011 and estimated catches for 2012-2014. Catch remains steady, representing about 86% of the 2012 ABC. Pacific ocean perch is a Tier 3a stock and the projection model showed the 2013 biomass decreased resulting in slightly lower ABCs and OFLs for 2013 and 2014 relative to last year. The Plan Team concurs with the assessment and recommends an ABC of 16,412 t and OFL of 18,919 for 2013.

A full assessment will be conducted in 2013 which will include updated growth and age-length matrices. No other major changes to the assessment are planned contingent upon the upcoming CIE review in March 2013. **The Plan Team generally recommends that as part of the CIE review, authors focus on aspects of the assessment model that affect estimates of survey catchability.**

Of concern this year was that the Western area OFL was exceeded by 28 t in 2012. This occurred because of higher than expected catcher processor effort (and a relatively low TAC). Exceeding the OFL constrained other trawl fisheries in the area and limited their performance. Tom Pearson mentioned a shorter opening (6 hr) may be necessary to prevent exceeding the OFL in the future. Obren Davis (NMFS AK Regional Office) noted that before a 2013 directed fishery can be considered industry must bring forward a detailed catch plan that limits catch to the TAC/ABC to avoid recurrence of reaching the OFL.

The Team discussed options for apportioning future OFLs which included apportioning by

- 1) management area (status quo);
- 2) GOA-wide; or
- 3) areas fished/not fished.

Team members questioned whether apportioning OFLs to the management area level is relevant given the stock is well above target levels and multiple levels of precaution are built into the current management regime to prevent regular overharvest. Exceeding the Western GOA OFL is of some concern but the Team believes the overall population is less vulnerable to such occasional overages. Therefore, **the Plan Team recommends maintaining area specific ABCs but apportioning OFLs across the area currently open to bottom trawling (Western, Central, WYAK) and the area closed to bottom trawling (EYAK/SEO).** The recommended 2013 OFL value for the Western, Central and WYAK area is therefore 16,838 t (89%). The remaining area (east Yakutat/Southeast Outside) OFL would be 2,081 t (11%). This recommendation is supported by material presented in Appendix 9A: "Evaluation of stock structure for Gulf of Alaska Pacific ocean perch."

Northern rockfish

Chris Lunsford provided a summary of the northern rockfish executive summary for lead author Pete Hulson. This assessment was updated with catch data in 2012 for projecting 2013 and 2014 ABC. The Team noted that in general for all stocks where a projection is employed, the catch projection for the current year should be the current ABC or the current technique for estimating in year catches whichever is less. The Team approved the recommended ABCs and OFLs for 2013 and 2014.

Shortraker rockfish

Chris Lunsford provided a summary of the off-year assessment for shortraker rockfish for lead author Katy Echave. An off-year shortraker assessment executive summary was provided. Catches were updated for 2011 and 2012. No new assessment information was available; therefore the 2011 estimates are rolled over for the next two years. The Team approved the recommended ABCs and OFLs for 2013 and 2014. Recent catches were well below the ABC and OFL.

A full shortraker rockfish assessment will be presented in 2013. The Plan Team recommends that in addition to the current assessment methodology, authors use the Kalman filter method to estimate survey biomass and summarize the results for comparison at the September 2013 meeting. The Plan Team did not make other recommendations for changes to the assessment model but noted that recommendations may occur as a result of the March 2013 CIE review. The Plan Team also supports ongoing efforts to validate current ageing methodology.

Dusky rockfish

Chris Lunsford provided a summary of the off-year assessment for dusky rockfish. Dusky rockfish are a Tier 3a stock, and the 2012 off-year assessment consists of updating the 2011 projection model with updated catches. The 2012 catch in the western GOA exceeded the ABC for this area, and the 2012 catch in the central GOA increased from previous years, which likely was caused from increased numbers of vessels in the western GOA and an increased northern rockfish ABC in central GOA. The 2013 ABC from the updated projection model is 4,700 and similar to the projected 2013 ABC from the two-year ahead projection in the 2011 assessment model, which was 4,762 t.

Rougheye and blackspotted rockfish complex

Chris Lunsford provided a summary of the off-year assessment for the rougheye and blackspotted rockfish stock complex for lead author Kalei Shotwell. . This complex is in Tier 3a, and the 2012 off-year assessment consists of updating the 2011 projection model with updated catches. Overall catch is steady, and only about 45% of the GOA ABC is caught annually. The rougheye and blackspotted complex is in Tier 3a and the projection model estimate shows that the 2013 biomass remains stable resulting in similar ABC and OFL projections for 2013 and 2014. The Plan Team recommends an ABC

of 16,412 t and OFL of 1,482 t for 2013 which are slight increases over 2012. A full assessment will be completed in 2013. Changes to the assessment model are contingent on the CIE review in March of 2013.

A Plan Team member commented that rougheye and blackspotted rockfish are commonly caught during hook and line fisheries and since removals are small relative to the ABC there should be no impact integrating expanded data collection from the restructured observer program.

Thornyhead rockfish

Chris Lunsford provided a summary of the off-year assessment for the thornyhead rockfish stock complex for lead author Kalei Shotwell. Thornyheads are managed as a Tier 5 stock complex, and the 2012 off-year assessment consists of “rolling over” the estimated biomass, ABC, and OFL from the 2011 assessment. The Plan Team recommends that in addition to the current assessment methodology, authors use the Kalman filter method to estimate survey biomass and summarize the results for comparison at the September 2013 meeting.

Other rockfish

Chris Lunsford provided a summary of the off-year assessment for the Other Rockfish stock complex for lead author Cindy Tribuzio. Other Rockfish are managed as a Tier 5 stock complex, and the 2012 off-year assessment consists of “rolling over” the estimated biomass from the 2011 assessment, which was based on a weighted average of the three most recent GOA trawl surveys. The recommended values of OFL and ABC are 5,305 t and 4,045 t, respectively.

The ABCs for Other Rockfish in the western and central GOA were substantially exceeded in 2012, and the 2012 catch of harlequin rockfish in the central GOA was 38% larger than the average over recent years. The GOA Plan Team recommends examining the fishery catch records in more detail to determine which areas, species, and target fisheries are contributing to the higher catch levels.

Demersal Shelf Rockfish (DSR) species (primarily yelloweye rockfish) that occur in the GOA outside of the East Yakutat/Southeast management area are considered part of the Other Rockfish complex. The assessment authors indicate that they plan to examine the catch of DSR species that occur outside of the East Yakutat/Southeast management area. In 2012, retention of Other Rockfish catch in the central and western GOA was prohibited after the ABC was attained, and this affected several fisheries. The GOA Plan Team encourages examination of the catch of DSR species, and additionally requests examination of survey data to investigate whether a separate OFL and ABC can be established for DSR species outside of the East Yakutat/Southeast management area. Sources of information include the AFSC trawl and longline surveys, the IPHC longline survey, the HFICE data, and port sampling/survey data collected by ADF&G in Homer.

Atka Mackerel

Atka mackerel are a Tier 6 species. Most of the catch occurs in the western Gulf in the second half of the year during the rockfish trawl fishery as there is no directed fishing in the GOA due to Stellar sea lion protected measures. Age data from the 2011 fishery is the only new available data and was comprised of large numbers of fish from the 2006 and 2007 year classes, which are also prevalent in the Aleutian Islands. The recommendation for Atka mackerel remains Tier 6 which uses average catch history from 1978-1995. The Plan Team agrees with the author recommended ABC of 4700 t and OFL of 6200 t. A comment from the public stated that two things drive Atka mackerel catch; rockfish quotas and Atka mackerel abundance. In 2012 the distribution of Pacific ocean perch changed across the GOA with less effort in the Western Gulf. This shift in the rockfish fishery effort reduced Atka mackerel catch so changes in the rockfish fishery should be considered when setting TAC for Atka mackerel. The Team

noted the TAC has previously been set at 2,000 t to accommodate bycatch that occurs in other fisheries and that the 2012 catch of 1,178 t was only 59% of the 2012 TAC.

Demersal shelf rockfish:

Kristen Green presented the executive summary update for the DSR assessment. The ABC increase slightly due to an increase in average weight. There was increased catch compared to previous years due to the State opening additional areas to directed fishing than have been open in the past.

The author provided a review of the ROV survey and update from September. She responded to many of the Team's requests from the September meeting including providing written documentation of the pilot survey as well as more information on the other agencies also pursuing similar ROV work. These include WDFW, and DFO but she noted that the Alaska group is likely moving forward more quickly in their efforts to move this assessment methodology along for use in calculating a biomass estimate for stock assessment.

A number of questions were posed for input from the Team (with comments from Team following):

1. Where to survey next year?

Is it better to do intensive surveys in smaller areas or cover whole area but with less intensive survey effort? Discussion noted that the logistics of one boat doing the survey across larger area may be difficult and further evaluation of the trade-off in travel time should be done. Other ideas are to focus on areas of fishing intensity or areas on areas of higher variance.

2. How to proceed with stock assessment?

The team made a number of suggestions for moving forward. 1-use the ROV in the same manner as submersible, noting some concern as information currently lacking about consistency with side-by-side tows between the two. 2-Investigate use of sport harvest as any form of index? The author noted that it is tracked through creel surveys and then extrapolated but is localized thus hard to use as index. It may be possible to use the IPHC survey as an index but Dave Carlile's work with the yelloweye ASA model has not shown that the IPHC survey data tracks the submersible survey data well.

3. Continue 'super year' method with ROV?

Team members noted that DFO staff have a trawl survey set up similarly by area and likely have plan for incorporation into abundance estimates and might provide guidance on methodology. The author is encouraged to examine any trend data collected annually (e.g., IPHC survey) and not to consider smaller spatial areas than are already surveyed. Larger areas can be disaggregated but subsets of areas should be avoided.

4. How to incorporate ROV with ASA model?

5. When/how to write up ROV work?

6. What to do in 2013? ('on' year for GOA)-

The Team requested an update and analyses for September 2013.

Team members questioned the average weight calculation. The author noted that numbers of fish are available and the average weight is applied to all. This is using commercial catch data only and no size composition data are available. Team members questioned whether weight differences could be apportioned by area. The author noted that length frequency data can be collected with the ROV. The Team recommends stratifying weight differences by area to evaluate how average weight differs by area

and to evaluate ROV weight data compared with previous data. The author noted that video analysis should be available for use in the assessment next fall.

Skates

Olav Ormseth provided an overview of the executive summary for GOA skates. This assessment is a roll-over of 2012 recommendations given the lack of a survey in 2012. He noted that there was an increase in observed retention rates. Members of the public noted that this was driven by the lower flatfish catches and good prices for skates. The Team recommends the author provide survey biomass estimates next year using the recommended survey averaging approaches. The Team continues to recommend that skates species in the GOA be managed on bycatch-only status at this time. The Plan Team noted that the State Prince William Sound fishery for skates was discontinued due to concerns with over-exploitation and conservation.

Sculpins

Ingrid Spies presented an updated chapter on GOA sculpins. Since the biennial NMFS GOA bottom trawl survey was not conducted in 2012, the assessment consists of an executive summary. For sculpins, a complex mortality rate equal to the weighted average of instantaneous natural mortality rates for the four most abundant sculpin species in the survey (bigmouth, great, plain, and yellow Irish lord) is used. The status quo assessment approach (four most recent surveys) for averaging surveys for biomass was retained. For 2013 the full assessment will evaluate and apply the Kalman filter or random effects survey averaging approach as recommended in September 2012 by the Joint Plan Team for Tier 5 stocks. An NPRB proposal was submitted to complete additional work on natural mortality rate for GOA sculpins. The Plan Team agreed with the author's OFL and ABC recommendations, which were adjusted slightly from last year reflecting corrections to the data.

Shark complex

Jon Heifetz presented an updated chapter on GOA shark complex for lead author Cindy Tribuzio. Since the biennial NMFS GOA bottom trawl survey was not conducted in 2012, the assessment consists of an Executive Summary. For GOA sharks, the status quo method is recommended which consists of a Tier 5 assessment approach used for spiny dogfish and a Tier 6 approach for Pacific sleeper shark, salmon shark, and other/unidentified sharks. GOA shark complex catches have been steady for the last couple years and show a generally declining trend since 1997. Catches have been considerably lower than ABC. Spiny dogfish catch declined slightly between 2011 and 2012, while salmon and sleeper sharks showed a bit of an increase in 2012, and other/identified shark catch has remained very low. Salmon sharks are pelagic and generally have very low catch rates and so do not turn up often in observed samples, therefore due to small sample sizes when they are present, biomass estimates are associated with high variability.

Future developments for spiny dogfish includes development of length-based and surplus production models for the 2013 assessment, an ongoing satellite tagging study (tags have been deployed recently in Puget Sound as well as during the GOA longline survey), and an ongoing NPRB ageing study which looks at using vertebrae instead of fin spines. A Pacific sleeper shark genetics study is also ongoing, and very preliminary results show that there may be two distinct populations for the BS and the GOA/Canada.

Squid

Olav Ormseth presented an updated chapter on GOA squid. Since the biennial NMFS GOA bottom trawl survey was not conducted in 2012, the assessment consists of an Executive Summary. Squid catch so far reported to date in 2012 is the lowest level since squid catch data are available (1990-2012). Catch has remained low since the large peak in 2006 and nearly all catch occurs in Area 620. This pattern is

consistent with the 2007 survey high squid catch., The Plan Team agreed with the author's OFL and ABC recommendations, which were unchanged from last year.

Octopus

Kerim Aydin presented an updated chapter on GOA octopus. There is no new trawl survey data for this year. Octopus are caught incidentally to other targeted fisheries. The authors provided three different Tier 6 assessment approaches to estimate OFL and ABC for GOA octopus. The status quo approach used in 2011 is a Tier 5-like calculation of OFL using survey biomass multiplied by a relatively conservative estimate of natural mortality (0.53), and provides the largest estimate of OFL (1,941 t) and ABC (1,455 t). The second assessment method is a modified Tier 6 approach which uses the maximum of 1997-2007 historical catch and provides low estimates for OFL (298 t) and ABC (224 t). The final assessment method is a new approach that estimates the total mortality of octopus by the annual amount of octopus consumed by Pacific cod. This consumption-based approach provides estimates about 20% below those provided by the status quo approach for OFL (1,560 t) and ABC (1,170 t).

In September, the consumption approach was presented by Kerim Aydin and the Plan Team recommended he develop it further for presentation at the November meeting. This approach is based on the assumption that predators may be better samplers of octopus than the survey, and Pacific cod was chosen as the proxy. The authors estimated annual consumption of octopus by Pacific cod and estimated M*B. Data was used from 1990-2009 stomach analysis of Pacific cod (2011 data not analyzed yet). These samples were distributed throughout the GOA. There is a relatively low occurrence of octopus in Pacific cod stomachs, although there is good correspondence with where Pacific cod are eating octopus and where the fishery is catching octopus. Samples showed octopus were consumed mostly at depths greater than 100 m. Presence of octopus in the diet of Pacific cod shows a steep increase associated with Pacific cod length. The authors used octopus beak hood length (directly related to octopus weight) versus Pacific cod length and, as expected, larger Pacific cod are eating larger octopus. The data shows that there was very high consumption of octopus in 1990. The majority of octopus present in Pacific cod stomachs were small (<5 kg) which is similar to the size of animals caught in both commercial and survey trawls. However, most of the octopus caught in the commercial fishery (primarily pot gear) average about 15 kg.

The authors considered this a conservative approach since only about one-third of predation is being accounted for, the assessed biomass from this estimate is lower than the status quo approach, and the harmonic mean of simulated rates of consumption was used to estimate OFL. The authors preferred the consumption method rather than using the modified Tier 5-like approach which uses poor estimates of both survey biomass and natural mortality.

The Plan Team's concern was that although there was some overlap with octopus caught in the commercial fishery, most octopus present in stomachs were much smaller than the majority caught in the fishery. This means that the approach measured consumption on a different demographic than the fishery exploits. The authors said the consumption method was not robust enough yet to provide an index of recruitment. The authors also noted that there is a mismatch between trawl survey and pot gear (small versus large octopus).

The Plan Team commended the efforts of the authors, particularly in responding to requests the Team made in September. However, the Team recommended remaining with the current Tier 6 assessment method of using survey biomass since the consumption-based method seems to be at least as uncertain (if not more) as the status quo approach.

Grenadiers

Jon Heifetz presented the stock assessment for grenadiers. The document included discussions on options for moving the complex into both FMPs as well as presentation of a Kalman filter model for estimating biomass. Discussion noted that there has been recent interest in retaining giant grenadiers in the GOA given an overseas market for filets. Some previous attempts at a market occurred in 2006 and 2008.

The Kalman filter leads to substantially lower biomass estimates and ABCs but these estimates remain much larger than the average catches in recent years. The Team discussed management recommendations and progress towards an analysis of EA to move back into the GOA FMP.

The Team continues to recommend that grenadiers should be moved into the GOA FMP and managed ‘in the fishery’.

Forage Fish

Olav Ormseth presented an overview of an expanded assessment for Forage Fish (per Plan Team request in off-years). Several changes in this year’s report include:

1. Inclusion of additional species beyond FMP forage group
2. Focus on monitoring & conservation issues
3. Improved coordination with Ecosystem Considerations chapter

These changes were motivated by recent developments (national & international, resulting in increased interest in forage species); and a Gulf of Alaska euphausiid index (using acoustic data from pollock surveys – back scatter) developed by MACE. Emphasis in this report is on an overview of forage species & their management, distribution & abundance in the GOA.

Species included in the report:

- “FMP forage fish” group (including krill; see draft report)
- PAHE (Pacific herring)
- Juvenile groundfish & salmon
- Shrimps
- Squids

In general most of these species are poorly surveyed, and none are really appropriately surveyed (in fact, there is no directed survey effort for forage fish except ADF&G surveys for PAHE). The author summarizes trends in inshore vs. offshore distribution from trawl surveys. Eulachon was fairly evenly distributed across Gulf and was most present in bycatch, primarily in the Shelikof pollock fishery. Bycatch of PAHE & shrimp shows occasional spikes in catches of Pacific herring; shrimp caught more consistently as bycatch.

The authors intend to derive capelin & eulachon distribution by putting together multiple time-series datasets.

Capelin: small mesh survey (designed for shrimp) conducted by ADFG; refined since ‘70s. Shows that capelin abundant through mid-80s, have not recovered. Now absent from Unalaska area but otherwise distribution constant across time. Acoustic survey shows upsurge of capelin in 2000s (& consistently so) although still not showing up in small mesh surveys.

Eulachon: also derived from small mesh survey data. Shows 1980s & 2000s periods of abundance, low in 90s. Not entirely good match of trends between small mesh, trawl survey biomass, & acoustic survey CPUE.

Suggestions by the Team:

- Inclusion of additional background information on the development of the FMP category such that it is clear it was implemented to prohibit targeted harvest of these species.
- Specific cross-referencing of information in the forage fish assessment and the Ecosystem Considerations chapter. The intent is that this information on species indices may be distilled in the Ecosystem Chapter but will have broader scope and more detail in the forage fish appendix.
- Including this report as an expanded assessment in off-years (when the Team has additional time to discuss new information)

Stock structure suggestions for 2013

Based on discussions in relation to DSR removals in the GOA under other rockfish and the DSR assessment, the Team has already requested additional information with respect to vulnerability and relative catch by species for September 2013. Therefore, given that 2013 is a survey year, the Team recommends tabling additional stock structure assignments until next September and then possibly requesting all remaining authors who have not yet filled out their tables to proceed with that in the off year cycle for 2014.